176. *Ant. barysoma*, n. sp.

Minor, alis ant. griseis, ochreo albidoque mixtis, punctis disci plerisque circulatim dispositis sæpius obsoletis nigris; post. saturate fuscis.

♂. 15-16 mm. Head, palpi, antennæ, thorax, abdomen and legs greyish-fuscous; hairs of posterior tibiæ paler. Forewings elongate, posteriorly somewhat contracted, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; fuscous-grey, mixed with ochreous and grey-whitish scales; six or seven small black dots arranged in an irregular oval in disc, often partially obsolete: cilia whitish-ochreous. Hindwings dark fuscous; cilia whitish-ochreous, with a dark fuscous line near base.

The unusual form of the forewings gives this species a rather singular facies.

Common at Deloraine, Tasmania, in November, amongst rushes (*Juncus*) in swampy places, flying rather actively and apparently naturally by day; also taken by Mr. G. H. Raynor, near Melbourne.

Some remarks on the action of Tannin on Infusoria.

By Harry Gilliatt, Esq.

In the April number of the "Royal Microscopical Society's Journal," appeared a paper by Mr. Waddington* on the action of Tannin on the Cilia of the Infusoria, which must have aroused considerable interest in the minds of those Microscopists who pay special attention to this group.

Mr. Waddington says:—

"In trying the effect of various Chemicals on Infusoria—principally *Paramœcium Aurelia*, I was led to use a solution of tannin, or tannic acid; and I was surprised to find that the immediate action of this chemical was to render the cilia visible without any manipulation of the light.

* "The action of Tannin on the Cilia of Infusoria, with remarks on the use of solution of Sulphurous Oxide in Alcohol"; by Henry J. Waddington. read 14th March 1883. "Journal Royal Microscopical Society," April, 1883.

"It may have been noticed, that when these Infusoria have been killed by ordinary means, such as heating the water in which they are contained, the cilia are very difficult to observe, probably owing to their great transparency, so that no correct idea, has, I think, been obtained of their size or quantity.

"On placing however, a drop of water containing *Paramœcia* on a slip side by side with a minute quantity of a solution of tannin and making a junction of the two, it will be seen that the instant the *Paramœcia* approach the mixed fluids, their motion is arrested, of course in a greater or less degree according to the strength of the tannin. They are generally rendered perfectly quiescent, and the cilia begin to appear and continue to develope until the body of the animalcule appears surrounded by them. The symmetry of the cilia depends much upon the strength of the solution. * * *

"To bring out the best appearance of the cilia over the whole of the surface of the *Paramœcium* the parabola is required; the animal then appears as if it were supported on the slip by its cilia.

"If the tannin solution is strong, the *Paramœcium* is almost instantly rendered motionless, and the cilia appear to be entirely removed, remaining in a more or less confused state at the extremity.

"I have shown this action to several Microscopists, and so contrary is the remarkable development of the cilia to received ideas, that on nearly every occasion I have been met with the remark that they were not cilia but fungoid growths. This however, is entirely disproved by the fact that they are developed as it were instantaneously."

Mr. Waddington believes that the action of the tannic acid on the cilia is analogous to its action on gelatine, rendering them leathery.

Struck with the remarkable appearance shown in Mr. Waddington's illustrations, I made a number of experiments with glycerole of tannin as described by Mr. Waddington. On exposing *P. Aurelia* to the action of the tannin, I found the effect quite as startling as described; the animalcules, as the acid began to affect

them, darted about with great rapidity, endeavouring to conceal themselves beneath any vegetable matter on the slip, their motions gradually growing slower ; then they revolved slowly two or three times. A sudden contraction of the body followed, and, in a few seconds, the appearance shown in Mr. Waddington's illustrations.

The regularity of the fine transparent acicular fringe that now surrounded the animalcule, or whether it was completely thrown off, appeared to depend, as described by Mr. Waddington, on the strength of the solution. In those cases when the appendages were separated from the body it was not unusual to find a few spiral shaped, although after careful comparison the majority were rod-like.

After examination of numerous specimens treated with the acid, it seemed difficult to reconcile cilia of such length—in some cases exceeding the width of the body—with the action apparent in the ciliary movements of the living animalcule. But while observing an example under oblique illumination, I was struck with the appearance of fine lines across it, and was thus reminded of the rod-like bodies or trichocysts so fully developed beneath the cuticle of *P. Aurelia*. Referring to Saville Kent's "Manual of the Infusoria," his remarks upon these bodies introduced a new feature. I will quote as briefly as possible what Mr. Kent says:—

"These structures—trichocysts—exist in their most characteristic form, in the very cosmopolitan species, *Paramœcium Aurelia*, taking the form of minute and exceedingly slender rod-like bodies, or fibrillæ * * * distributed in an even layer immediately beneath the cuticle. * * * Under certain conditions, including the use of artificial stimuli, such as weak acetic acid, these trichocysts become suddenly elongated, and their distal ends piercing the overlying cuticle stand out like fine, stiff, hair-like setæ beyond the cilia, around the entire circumference of the animalcule, frequently becoming entirely separated from the thin base of attachment." P. 80.

Stein describes also the treatment of the trichocysts with acetic acid. "Infusionthierchen," p. 61.

Mr. Kent adds that the names of Ehrenberg and Oscar Schmidt, are usually associated with the earliest discovery of these special structures; but he has traced their discovery to Sir John Ellis, whose account of them appears in the "Philosophical Transactions." Vol. 59, 1769.

Ellis says:—"By applying a small stalk of the Horseshoe Geranium, *G. Zonale* Linn., fresh broken, to a drop of water in which these animalcules are swimming, we shall find that they become torpid, instantly contracting themselves into an oblong oval shape, with their fins extended like so many bristles all round their bodies." P. 81.

Mr. Kent further describes the investigations of Professor Allman on *Bursaria* (*panophrys*) *leucas*, which appeared in the "Journal of Microscopical Science" for the year 1855, as follows:—

"Under external irritation, such as the drying away of the surrounding water, the application of acetic acid, or forcible compression, they become similarly and suddenly transformed into fine, long, hair-like, filaments, or setæ, which projected from the whole periphery." P. 82.

It may, I think, be fairly concluded, that the effects observed by Mr. Waddington in his experiments, must be attributed to the action of tannic acid on the trichocysts of *Paramecium Aurelia* and not, as he considers, to its action on the Cilia.

NOTES AND EXHIBITS.

Mr. Haswell exhibited a series of anatomical and Zoological preparations.

Mr. Deane exhibited a small collection of rocks, chiefly igneous, from the railway between Gunnedah and Narrabri.

Mr. Pedley exhibited a specimen of what is called Copper Grass at Cobar, and is regarded as a sure indication of that metal, growing only, it is said, upon the outcrop of a lode. Mr. Haviland suggested that it might be a species of *Xerotes*.